

# Listeriosis



## Section 1:

## ABOUT THE DISEASE

### A. Etiologic Agent

Listeriosis is caused by the bacterium *Listeria monocytogenes*.

### B. Clinical Description

Reported cases of listeriosis typically manifest as meningoen­cephalitis or bacteremia in newborns and adults. Symptoms of meningoen­cephalitis include fever, headache, stiff neck, nausea, and vomiting. Infection with *L. monocytogenes* may cause abortion in pregnant women. The onset may be sudden, or in the elderly and in those who are immunocompromised, it may be gradual. Delirium and coma may occur. Newborns, the elderly, immunocompromised persons, and pregnant women are most at risk for severe symptoms. Infections in healthy persons may resemble mild flu-like illness. The case-fatality rate in infected newborns reported for listeriosis is about 30%.

### C. Vectors and Reservoirs

Reservoirs for *L. monocytogenes* are soil, water, silage, mammals, and fowl.

### D. Modes of Transmission

*Listeria* can be acquired through ingestion of contaminated foods or through contact with infected animals or birds. Unlike most other foodborne pathogens, *Listeria* can grow in contaminated, refrigerated foods. Rare nursery outbreaks have been reported, attributed to contaminated equipment or materials. *L. monocytogenes* may be acquired by the fetus *in utero* or during delivery.

### E. Incubation Period

A range of 3–70 days has been reported, with a median incubation period of about 21 days.

### F. Period of Communicability or Infectious Period

*L. monocytogenes* may be shed for months in the stool of infected persons. Following delivery, mothers of infected newborns may shed *L. monocytogenes* for 7–10 days in vaginal secretions or in urine.

### G. Epidemiology

*Listeria* are widely distributed in nature. Most cases of human listeriosis are sporadic, but foodborne and nosocomial outbreaks have been documented. Foods associated with infection include unpasteurized milk and milk products (including soft cheeses), processed meats, and contaminated vegetables. Newborns, the elderly, immunocompromised persons, and pregnant women are at greater risk of infection. About 30% of diagnosed cases occur within the first three weeks of life.

### H. Bioterrorist Potential

This pathogen is not considered to be of risk for use in bioterrorism.



## Section 2:

## REPORTING CRITERIA AND LABORATORY TESTING

### A. What to Report to the Massachusetts Department of Public Health (MDPH)

- ◆ The isolation of *L. monocytogenes* from a normally sterile site (e.g., blood or cerebrospinal fluid [CSF], or less commonly, joint, pleural, or pericardial fluid).
- ◆ In the setting of miscarriage or stillbirth, isolation of *L. monocytogenes* from placental or fetal tissue.

*Note: See Section 3C for information on how to report a case.*

### B. Laboratory Testing Services Available

The MDPH State Laboratory Institute (SLI), Reference Laboratory performs confirmatory testing of *L. monocytogenes* isolates from blood and CSF specimens. In addition, the SLI Reference Laboratory requests submission of all *L. monocytogenes* isolates, regardless of source, for further testing for disease surveillance purposes.

**For more information about testing, call the SLI Reference Laboratory at (617) 983-6607.**

In addition, the SLI Food Microbiology Laboratory, at (617) 983-6616, will test implicated food items from case clusters or outbreaks. See Section 4D for more information.



## Section 3:

## REPORTING RESPONSIBILITIES AND CASE INVESTIGATION

### A. Purpose of Surveillance and Reporting

- ◆ To track the occurrence of listeriosis so that sources of major public health concern (e.g., food) may be identified and control measures may be initiated.

### B. Laboratory and Health Care Provider Reporting Requirements

Listeriosis is reportable to the local board of health (LBOH). The MDPH requests that health care providers immediately report to the LBOH in the community where the case is diagnosed, all confirmed or suspected cases of listeriosis, as defined by the reporting criteria in Section 2A.

Laboratories performing examinations on any specimens derived from Massachusetts residents that yield evidence of *Listeria* infection shall report such evidence of infection directly to the MDPH within 24 hours.

### C. Local Board of Health (LBOH) Reporting and Follow-Up Responsibilities

#### *Reporting Requirements*

MDPH regulations (*105 CMR 300.000*) stipulate that listeriosis is reportable to the LBOH and that each LBOH must report any confirmed case of listeriosis or suspected case of listeriosis, as defined by the reporting criteria in Section 2A. Cases should be reported to the MDPH Bureau of Communicable Disease Control, Office of Integrated Surveillance

and Informatics Services (ISIS) using a MDPH *Listeriosis Case Report Form* (found at the end of this chapter). Refer to the *Local Board of Health Timeline* at the end of this manual's *Introduction* section for information on prioritization and timeliness requirements of reporting and case investigation.

### *Case Investigation*

1. It is the responsibility of the LBOH to complete a MDPH *Listeriosis Case Report Form* (found at the end of this chapter) by interviewing the case and others who may be able to provide pertinent information. Much of the information required on the form can be obtained from the health care provider or from the medical record.
2. Use the following guidelines to assist in completing the form:
  - a. Accurately record the demographic information, occupation (if applicable), date reported to your office, date investigation started, and date of diagnosis.
  - b. Record the clinical information.
  - c. Indicate the type of infection caused by *L. monocytogenes*.
  - d. Indicate the type of specimen from which *Listeria* were isolated, laboratory tests used, and date the first positive culture was obtained.
  - e. If the case was diagnosed while pregnant or within two weeks of delivery, indicate outcome of pregnancy and associated dates. If the case is a newborn, complete the newborn section.
  - f. Complete the exposure history section. Ask the case about suspect food items consumed and contact with livestock during the three weeks prior to illness.
  - g. If you suspect that the case became infected through food, use the MDPH *Foodborne Illness Complaint Worksheet* (found at the end of this chapter) to facilitate the recording of additional information. Record any restaurants at which the case ate suspect food(s), including food item(s) and date(s) of consumption. It is requested that LBOH fax or send this worksheet to the MDPH, Center for Environmental Health, Food Protection Program (FPP); see top of worksheet for fax number and address. This information is entered into a database to help link other complaints from neighboring towns, thus helping to identify foodborne illness outbreaks. *Note: This worksheet does not replace the MDPH Listeriosis Case Report Form.*
  - h. If you have made several attempts to obtain case information, but have been unsuccessful (e.g., the case or health care provider does not return your calls or respond to a letter, or the case refuses to divulge information or is too ill to be interviewed), please fill out the form with as much information as you have gathered. Please note on the form the reason(s) why it could not be filled out completely.
3. After completing the form, attach laboratory report(s) and fax or mail (in an envelope marked "Confidential") to ISIS. The confidential fax number is (617) 983-6813. Call ISIS at (617) 983-6801 to confirm receipt of your fax. The mailing address is:

**MDPH, Office of Integrated Surveillance and Informatics Services (ISIS)**  
**305 South Street, 5<sup>th</sup> Floor**  
**Jamaica Plain, MA 02130**  
**Fax: (617) 983-6813**

4. Institution of disease control measures is an integral part of case investigation. It is the responsibility of the LBOH to understand, and if necessary, institute the control guidelines listed in Section 4.



## Section 4:

# CONTROLLING FURTHER SPREAD

### A. Isolation and Quarantine Requirements (*105 CMR 300.200*)

None.

### B. Protection of Contacts of a Case

None.

### C. Managing Special Situations

#### *Reported Incidence Is Higher Than Usual/Outbreak Suspected*

If the number of reported cases of listeriosis in your city/town is higher than usual or if you suspect an outbreak, investigate to determine the source of infection and the mode of transmission. A common vehicle, such as a food item, should be sought, and applicable preventive or control measures should be instituted. Consult with the epidemiologist on-call at the MDPH Division of Epidemiology and Immunization at (617) 983-6800 or (888) 658-2850. The Division can help determine a course of action to prevent further cases and can perform surveillance for cases across town lines, which would otherwise be difficult to identify at the local level.

*Note: Refer to the MDPH's Foodborne Illness Investigation and Control Reference Manual for comprehensive information on investigating foodborne illness complaints and outbreaks. Copies of this manual have been made available to LBOH. It can also be located on the MDPH website in PDF format at [www.mass.gov/dph/fpp/refman.htm](http://www.mass.gov/dph/fpp/refman.htm). For the most recent changes to the Massachusetts Food Code, contact the FPP at (617) 983-6712 or through the MDPH website at [www.mass.gov/dph/fpp](http://www.mass.gov/dph/fpp).*

#### *Multi-State Clusters*

The Centers for Disease Control and Prevention (CDC) is working to identify multi-state clusters of *Listeria* infection. Cases, which may be part of such clusters, will require additional follow-up and data collection by LBOH. Advice on follow-up activities for such situations will be provided by the MDPH Division of Epidemiology and Immunization staff on a case-by-case basis.

### D. Preventive Measures

#### *Environmental Measures*

Implicated food items must be removed from consumption. A decision about testing implicated food items can be made in consultation with the FPP or the MDPH Division of Epidemiology and Immunization. The FPP can help coordinate pickup and testing of food samples. If a commercial product is suspected, the FPP will coordinate follow-up with relevant outside agencies. To contact the FPP, please call (617) 983-6712.

*Note: The role of the FPP is to establish policy and to provide technical assistance with the investigation, such as interpreting the Massachusetts Food Code, conducting a Hazard Analysis and Critical Control Point (HACCP) risk assessment, initiating enforcement actions, and collecting food samples.*

The general policy of the SLI is to test only food samples implicated in suspected outbreaks, not in single cases (except when botulism is suspected). The LBOH may suggest that the holders of food implicated in single case incidents either locate a private laboratory that will test food or store the food in their freezer for a period of time, in case additional reports are received. However, a single, confirmed case with leftover food consumed within the incubation period may be considered for testing under particular circumstances.

#### *Personal Preventive Measures/Education*

**A national or regional recall of a food product for *Listeria* contamination often initiates a desire by consumers to have implicated food samples tested for contamination. The SLI will perform such testing on a case-by-case basis (e.g., high-risk individual such as a pregnant woman). Requests for testing should be directed to the FPP at (617) 983-6712.**

To avoid infection with *Listeria*:

- ◆ Thoroughly cook all meat, including hot dogs, and thoroughly reheat food until steaming hot.
- ◆ Wash all raw vegetables.
- ◆ Avoid raw (unpasteurized) milk or foods made from raw milk.
- ◆ Avoid contamination of cooked or ready-to-eat foods by raw meats or unwashed vegetables.
- ◆ Wash hands, knives, and cutting boards after handling uncooked foods.

In addition, individuals at high risk for developing listeriosis (e.g., pregnant women or immunocompromised persons, including individuals taking steroids) should:

- ◆ Avoid soft cheeses (hard cheeses, processed cheeses, cream cheese, cottage cheese, and yogurt need not be avoided).
- ◆ Cook hot dogs and other ready-to-eat meats (such as sliced deli meat and prepackaged cold cuts) before eating.

**A Listeriosis Public Health Fact Sheet is available from the MDPH Division of Epidemiology and Immunization or on the MDPH website at [www.mass.gov/dph](http://www.mass.gov/dph). Click on the “Publications and Statistics” link, and select the “Public Health Fact Sheets” section under “Communicable Disease Control.”**



## ADDITIONAL INFORMATION

The formal CDC surveillance case definition for listeriosis is the same as the criteria outlined in Section 2A of this chapter. (The CDC and the MDPH use the CDC case definitions to maintain uniform standards for national reporting.) When reporting to the MDPH, always use the criteria outlined in Section 2A.

*Note: The most up-to-date CDC case definitions are available on the CDC website at [www.cdc.gov/epo/dphsi/casedef/case\\_definitions.htm](http://www.cdc.gov/epo/dphsi/casedef/case_definitions.htm).*



## REFERENCES

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## **FORMS & WORKSHEETS**

*Listeriosis*

# Listeriosis

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## LBOH Action Steps

*This form does not need to be submitted to the MDPH with the case report form. It is for LBOH use and is meant as a quick-reference guide to listeriosis case investigation activities.*

LBOH staff should follow these steps when listeriosis is suspected or confirmed in the community. For more detailed information, including disease epidemiology, reporting, case investigation, and follow-up, refer to the preceding chapter.

- ☐ Notify the MDPH Division of Epidemiology and Immunization at (617) 983-6800 or (888) 658-2850 to report any confirmed case(s) of listeriosis.
- ☐ Obtain laboratory confirmation. (Isolation of *L. monocytogenes* from a normally sterile site, [e.g., blood or cerebrospinal fluid, or less commonly, joint, pleural, or pericardial fluid]).
- ☐ For listeriosis suspected to be the result of food consumption, complete a MDPH *Foodborne Illness Complaint Worksheet* and forward to the MDPH Center for Environmental Health, Food Protection Program (FPP).
- ☐ Identify suspect foods and remove from the environment.
- ☐ Contact the MDPH Division of Epidemiology and Immunization or the FPP to discuss whether or not to submit suspect foods for testing.
- ☐ Identify other potentially exposed persons.
- ☐ Fill out the case report form (attach laboratory results).
- ☐ Send the completed case report form (with laboratory results) to the MDPH Bureau of Communicable Disease Control, Office of Integrated Surveillance and Informatics Services (ISIS).